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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,405	07/15/2004	Masashi Gabe	953.1017	2649
21171	7590	05/01/2006	EXAMINER	
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			NGUYEN, TU MINH	
			ART UNIT	PAPER NUMBER
			3748	

DATE MAILED: 05/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/501,405

Applicant(s)

GABE ET AL.

Examiner

Tu M. Nguyen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3,5,6,8 and 10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,6,8 and 10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. An Applicant's Request for Continued Examination (RCE) filed on April 17, 2006 has been entered. Per instruction from the RCE, an Applicant's Amendment filed on February 22, 2006 has been entered. Claims 11-12 have been canceled; and claims 1, 5, 6, and 10 have been amended. Overall, claims 1, 3, 5, 6, 8, and 10 are pending in this application.

#### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 5, 6, 8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pott (U.S. Patent 6,164,064) in view of Hirota et al. (U.S. Patent 6,233,925).

Re claims 1 and 6, as shown in Figures 1 and 3, Pott discloses an exhaust gas purifying system and a method of exhaust gas purification to be carried out with use of said exhaust gas purifying system provided with a NOx occlusion reduction type catalyst (3) in an exhaust passage (2) of a diesel engine (1) and a control unit (not shown but obviously must have) comprising a normal control operation means (normal mode of operation (lines 63-64 of column 1 and lines 26-29 of column 4)), a regeneration control initiation judging means (lines 55-56 of

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column 1) for detecting a regeneration control initiation timing for the NO<sub>x</sub> occlusion reduction type catalyst, a rich-burn control operation means (lines 61-62 of column 1) for executing a control operation for generating an exhaust gas which is in a fuel-rich state, accompanying recirculation of exhaust gas (lines 17-25 of column 4), and a catalyst activation control operation means (lines 57-60 of column 1) for executing a control operation for activating the NO<sub>x</sub> occlusion reduction type catalyst immediately before a rich-burn operation is performed, and performing a catalyst activation control operation (lines 57-60 of column 1) by the catalyst activation control operation means when it is judged by the regeneration control initiation judging means (lines 55-56 of column 1) that a regeneration control for the regeneration of the NO<sub>x</sub> occlusion reduction type catalyst is to be initiated and thereafter executing a rich-burn control operation (lines 61-62 of column 1) accompanying a recirculation of EGR gas (lines 17-25 of column 4) by the rich-burn control operation means to thereby regenerate the NO<sub>x</sub> occlusion reduction type catalyst,

wherein the catalyst activation control operation means executes a burning control in the vicinity of the stoichiometric air-fuel ratio (curve III between point A and E) in the condition of an EGR valve being totally closed, and at the same time, executing a multi-stage injection and an early injection in the fuel injection into cylinders (lines 1-7 of column 4) and controlling the torque generation of the diesel engine by an intake control to reduce a torque variation during the transition from the normal control operation to the catalyst activation control operation (to prevent a reduction in power or torque when the engine is transitioned to a catalyst activation control operation, a lean operation is maintained to increase an exhaust gas temperature (see

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Figure 3) and an intake control such as lowering a charge pressure and partial throttling of an intake air is performed (see line 60 of column 3 to line 7 of column 4)).

Pott, however, fails to disclose that the NOx occlusion reduction type catalyst has a catalyst metal and a NOx occluding substance; and that the catalyst activation control operation means executes a burning control in the vicinity of the stoichiometric air-fuel ratio in a range of 0.8 to 1.1 in terms of an excess air factor.

As illustrated in Figure 1 and 12, Hirota et al. teach that it is conventional in the art to utilize a NOx occlusion reduction type catalyst (10) having a catalyst metal (noble metal such as platinum) and a NOx occluding substance (alkali-earth metal such as barium) (lines 39-64 of column 4). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the NOx occlusion reduction type catalyst taught by Hirota et al. in the system and method of Pott, since the use thereof would have been routinely practiced by those with ordinary skill in the art to effectively removed harmful NOx and SOx emissions in the exhaust gas.

Pott discloses the claimed invention except for specifying an optimum range of an excess air factor between 0.8 and 1.1 for the catalyst activation control operation means. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a specific optimum range of excess air factor during the catalyst activation control operation means in Pott, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

*In re Aller*, 105 USPQ 233.

Re claims 3 and 8, in the modified system and method of Pott, the NOx occlusion reduction type catalyst comprises a reducer occluding substance (the NOx occlusion reduction type catalyst in Hirota et al. comprises zeolite as a reducer occluding substance (lines 1-4 of column 12)).

Re claims 5 and 10, the modified system and method of Pott comprise performing the rich-burn control operation (portion between point E and F in Figure 3) to recirculate EGR gas to generate an exhaust gas which is in a fuel-rich state (see curve III between point E and F in Figure 3) and to control the torque generation of the diesel engine by an intake control of the diesel engine to reduce a torque variation during the transition from the catalyst activation control operation to the rich-burn control operation (see lines 17-25 of column 4; also see line 60 of column 3 to line 7 of column 4 where a similar intake control is performed to reduce a torque variation when transitioning from a normal control operation to a catalyst activation control operation).

#### ***Response to Arguments***

4. Applicant's arguments with respect to the references applied in the previous Office Action have been fully considered but they are moot in view of the new ground(s) of rejection.

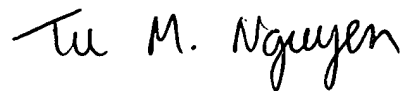
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*Communication*

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TMN

Tu M. Nguyen

April 28, 2006

Primary Examiner

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